A CASE OF PURULENT, PRIMARY, SPINAL LEPTOMENINGITIS.

By FRANK R. FRY, M.D., St. Louis.

John D——, aged 27 years, an American and a house servant.

I first saw the patient December 10th, 1895. He was in bed, complaining of a severe pain in the lower portion of the back, and general malaise. I did not suspect disease of the spinal cord or membranes. Owing to my absence from the city, I did not see the case again until five days later, Dec. 15th. The record of these five days is, therefore, very imperfect. The salient points obtained, however, are as follows: He had been engaged at his usual duties, inside and outside work about the house, until the day before I saw him. The pain in the lower dorsal and lumbar regions became very severe on the evening of the 10th, after I had seen him. It remained so on the 11th and 12th. On the 14th it was not so severe, but radiated more into the abdomen and thighs. During all of this time he slept very little, and at times complained considerably; but, not wishing to annoy his employers, he evidently suffered much in silence. On the 14th he was seen by Dr. M. A. Bliss, who only made a cursory examination and used a catheter, drawing a large quantity of urine.

When I saw him, on the 15th, the bladder was full, and the catheter was again used. There were paresis and partial anesthesia of the lower extremities, but he was still able to get into and out of bed unassisted. Arrangements were made to send him to a hospital.

On Dec. 16th he was removed to St. Luke's Hospital. At 7 P.M. the following note was made: He complains every few minutes of severe pain seizures, which encircle the thorax at about the level of the nipples. Complete paralysis and anesthesia of the lower extremities are noted. On closer examination the line of partial anesthesia is found to reach within four inches of the nipples. The patient is comparatively comfortable with morphine given hypodermically.

Dec. 17th. The patient's condition much the same as on the 16th. Although eased by morphine he complains frequently of pain in the back and chest. There is neither stiffness nor tenderness in the neck.

Dec. 18th. Complaining of some soreness and pain in the arms and back of the neck. The muscles of the neck are firm and tender to pressure. Passive movements of the head are resisted. He lies with the arms abducted and the hands resting on the sides of the thorax. He has vomited frequently during the day.

Dec. 19th. The neck is very stiff. He does not move his head, and makes much outcry when it is moved passively. The upper extremities are rapidly becoming paretic and numb. Their position is changed frequently by the nurses at his request. Most of the time he prefers to have them extended on pillows. He is very weak, but not in great pain, except when he is moved in attending to the decubitus, etc. The nausea is controlled by carbolic acid and cocaine.

Dec. 20th. The paralysis and anesthesia are extending in the upper extremities. The neck is very stiff and the head is fixed. The respiration is bad, and the patient very weak. The nausea is still controlled by carbolic acid, etc.

Dec. 21st. On the morning of the 21st the patient is still able to move the fingers and wrist of the right side; the left arm and hand are completely paralyzed. He is failing rapidly during the day. The respiration is shallow and labored. Nausea is frequent. The sensorium is clear. Death occurred at 11 P.M., from exhaustion and respiratory failure.

Subjoined is a record of the temperature, pulse and respiration. An examination of the hospital record in detail shows that the fluctuations in temperature here noted were not due to the treatment employed. After the patient reached the hospital an attempt was made to keep ice-bags to the spine, but they occasioned so much annoyance to him that they were discontinued after a few hours. Quinine in 3 gr. doses was given irregularly, having been frequently discontinued on account of nausea. Morphine was used hypodermically, and small doses of carbolic acid and cocaine were given to control vomiting.

	Temperature.	Pulse.	Respiration.
Dec. 16th— 7 P.M.	100.6	94	24
Dec. 17th— 1 A.M.	101.6	98	24
“ — 6 A.M.	101.8	102	24
“ —12 M.	103.2	100	36
“ — 6 P.M.	104.4	120	32
“ —12 P.M.	102.8	130	36
Dec. 18th— 4 A.M.	104.6	132	38
“ — 6 A.M.	102.6	124	30
“ —12 M.	99.6	102	30
“ — 3 P.M.	101.2	114	26
“ — 9 P.M.	101.8	108	28
“ —12 P.M.	100.2	108	26
Dec. 19th— 3 A.M.	99.8	98	24
“ — 6 A.M.	100.2	118	24
“ —12 M.	100.6	—	—
“ — 3 P.M.	100.8	110	30
“ — 6 P.M.	101.2	112	30
“ —12 M.	100.2	98	28
Dec. 20th— 2 A.M.	102.8	110	30
“ — 8 A.M.	104.2	108	30
“ —10 A.M.	102.2	98	24
“ —1.30 P.M.	101.8	92	22
“ —4.30 P.M.	101.8	92	22
“ —7.30 P.M.	100.8	90	26
“ —12 M.	102.4	86	28
Dec. 21st— 3 A.M.	103.6	92	26
“ — 6 A.M.	103.4	110	32
“ — 9 A.M.	104.2	108	32
“ —12 M.	103.2	108	38
“ — 3 P.M.	101.6	100	28
“ — 7 P.M.	101.2	98	30
“ —11 P.M.—death.			

A remarkable feature of this case was the absence of cerebral symptoms. There were none throughout its course, save on the last day, when there were moments of transient delirium or slight wanderings. The mind was clear within an hour of death. The patient endured his suffering with astonishing fortitude, and when told by his friends on the last day that he could not recover, he simply asked to be made as comfortable as possible until the end, hoping it would speedily come.

A post-mortem examination was made on Dec. 22d. The external surface of the spinal dura presented at no point an inflamed or purulent aspect. At one point in the lower dorsal region there was considerable creamy pus on the outside of the dura. It had evidently oozed through a small hole accidentally made. When wiped away, the dura under it looked normal as elsewhere. On slitting up the dura the cord was found incased in a mass of lymph, mostly of a gelatinous consistence, but at one point, in the lower dorsal region, creamy in appearance. The exudate was greatest in the lumbar and lower dorsal regions, shading off towards the cervical region, where the amount of it was not so great. At many places it was adherent in long strips to the inner surface of the dura. At one point in the lower dorsal region the cord was soft and attenuated for the space of about half an inch. The exudate was more abundant here than elsewhere, and creamy.

After removal of the cord and membranes, the spinal canal was carefully examined. No point of infection or of disease of any kind could be found in or about it. The genito-urinary tract was examined, and in turn all of the abdominal and thoracic viscera, and the walls of these cavities, without finding a pus-focus or disease of any kind. The brain was not examined.

Immedaitely after opening the dura, six tubes containing a sterilized culture medium were inoculated from different localities along the cord, and turned over to Dr. Amand Ravold, for bacteriological examination. His report is as follows: " Received from you, Dec. 22d, 1895, six tubes containing glycerine agar-agar, that had been inoculated by you with material from a post-mortem. They were placed in an incubator at 36.5 degrees C. After several days distinct growths were found in five of them. One remained sterile. The growths were plated in agar-agar, and the colonies that formed were separated in pure cultures and studied. One tube showed a pure culture of the streptococcus pyogenes; two tubes mixed cultures of the streptococcus pyogenes and the staphylococcus pyogenes aureus and albus; the remaining two tubes mixed cultures of the staphylococcus aureus and albus. In one of the latter tubes a short, thick, non-liquefying, non-pathogenic bacillus was found, which formed a reddish-brown growth on the medium. It was unknown to me, and was probably an accidental contamination from the air." (Signed) Amand Ravold.

From the patient and his employers we learned that the former had been having a series of boils on the back of his neck. An inspection of the body, both before and after death, showed no evidence of active furunculosis. On the back of the neck were a number of small spots of slightly bluish discoloration, smooth and clean, appearing to have been the sites of small furunculi, which had been healed for some time. We found no cause of the meningitis save the furunculosis, and this it seemed to have followed somewhat remotely.

The cord was put in Mueller's fluid and given to Dr. W. N. Beggs, of Denver, Colorado (formerly of St. Louis), for examination. His report is as follows:

" The inner surface of the dura has, in the preserved specimen, numerous elevated patches of a dark brown color and of irregular shape and size. These are very numerous, and are to be found in various regions without regularity of distribution or arrangement. They may be easily stripped off from the surface of the dura. Other portions of the dura present in the preserved specimen no macroscopically recognizable pathological characteristics, but in sections are readily seen under the microscope to be abnormal.

" Sections of the above-mentioned patches show them to be composed of a varying admixture of small, round cells, many of them polynuclear or with polymorphous nuclei (leucocytes, pus corpuscles), and a mass of fine homogeneous fibres (fibrin of varying arrangement). In places the latter are collected together into more or less regularly distributed laminæ, with but few of the leucocytes scattered between and through the layers. In other portions the fibres form an interlacing network with strands of varying thickness, forming meshes of the most diverse shapes and sizes. Within these meshes pus cells are present in varying quantities. In other portions the small, round cells are so numerous as to almost entirely conceal the fibrin fibrils. These varying portions pass gradually into each other without any determinate order (fibro-purulent exudate).

"The dura itself also presents a considerable diversity of characteristics. In some parts it is almost normal. In others the innermost layers are almost completely obscured by the great numbers of the small round cells (pus cells) present. In places the cells (both the small round cells and the fixed connective tissue cells) are arranged in rows between the laminæ of the connective tissue fibres after the manner of tendon cells, and in certain parts the fixed connective tissue cells are swollen, the nuclei indistinct, the cell bodies taking up diffusely the nuclear stain, and the contours being indefinite.

"In the pia the blood vessels are widely distended with blood, with, in some of them, a distinctly marginal arrangement of the leucocytes. Here and there foci of hemorrhage of varying degree are to be found. Throughout the meshes of the connective tissue of the membrane, but especially in the immediate neighborhood of the vessels, there is a very considerable infiltration with small round cells. To this is added, in the looser meshes of the membrane, masses of filbrin filaments as already described for the dura.

"The upper portions (cervical and upper dorsal) of the cord present marked degenerative lesions. These vary from swelling and indistinctness of the component elements of the individual nerve fibres to their entire disappearance. Such changes affecting single or few fibres occur in all tracts of the cord without special localization. In the lateral and posterior tracts especially, but also in a lesser degree in the anterior tracts, the fibres affected are so numerous that they form irregularly-shaped patches of varying size, readily recognizable to the naked eye. Such foci become more abundant toward the upper portion of the cervical region. Their distribution is somewhat irregular, as shown in the accompanying slides and drawings. In many of these foci there are no unaffected fibres left. There is no increase in the neuroglia; these fibres forming simply a loose meshwork, and the interspaces representing the tracts of the nerve fibres formerly occupying them. In the lower portions of the cord I have not found such degenerative changes. The gray substance is normal throughout." (Signed) W. N. Beggs.